

WHAT IS CLAIMED IS:

1. A power output apparatus operable to generate power from at least an electric motor to a drive shaft, comprising:

a pattern storing unit that stores a plurality of output characteristic patterns in which power is generated to the drive shaft;

5 a pattern selecting unit that selects one of said plurality of output characteristic patterns stored in the pattern storing unit; and

a drive controller that controls driving of at least the electric motor so that power that is within a range of the selected output characteristic pattern is generated to the drive shaft.

10 2. A power output apparatus according to claim 1, further comprising:

a power demand receiving unit that receives a power demand that is currently desired by an operator,

wherein the drive controller controls driving of at least the electric motor so that the desired power received by the power demand receiving unit is generated to the drive shaft.

15 3. A power output apparatus according to claim 1, further comprising:

an internal combustion engine operable to generate additional power to the drive shaft;

20 wherein said drive controller controls driving of both the electric motor and the engine.

4. A power output apparatus according to claim 3, further comprising:

a power demand receiving unit that receives a power demand that is currently desired by an operator;

25 wherein the drive controller controls driving of the electric motor and the engine so that the desired power received by the power demand receiving unit is generated to the drive shaft.

5. A power output apparatus according to claim 4, wherein the drive controller controls the electric motor and the engine so that the desired power is generated and provided to the drive shaft with a high energy efficiency.

30 6. A power output apparatus according to claim 1, wherein the output characteristic patterns stored in the pattern storing unit include a low-revolution high-torque pattern in which a relatively high torque is produced in a low-revolution region

of the drive shaft, and a high-revolution high-torque pattern in which a relatively high torque is produced in a high-revolution region of the drive shaft.

7. A power output apparatus according to claim 1, further comprising a selection output unit that outputs said one output characteristic pattern selected by the pattern selecting unit.

8. A power output apparatus according to claim 1, further comprising:
a command generating unit that generates a command to drive the electric motor with a driving characteristic that exceeds a rated value of the driving characteristic of the electric motor;

wherein the drive controller is operable, in response to the command from the command generating unit, to add a predetermined output to the selected output characteristic pattern, and control driving of the electric motor with the driving characteristic that exceeds the rated value for a limited period of time.

9. A power output apparatus according to claim 8, further comprising:
a motor state detector that detects an operating state of the electric motor; and

a state determining unit that determines whether the electric motor can be driven with the driving characteristic that exceeds the rated value, based on the operating state detected by the motor state detector,

wherein the drive controller performs control in response to the command from the command generating unit, depending upon a result of determination made by the state determining unit.

10. A power output apparatus according to claim 9, further comprising a result output unit that outputs the result of determination made by the state determining unit.

11. A motor vehicle comprising the power output apparatus according to claim 1.

12. A power output apparatus operable to generate power from at least an electric motor to a drive shaft, comprising:

a command generating unit that generates a command to drive the electric motor with a driving characteristic that exceeds a rated value of the driving characteristic of the electric motor; and

a drive controller that controls driving of the electric motor,

wherein the drive controller is operable, in response to the command from the command generating unit, to control driving of the electric motor with the driving characteristic that exceeds the rated value for a limited period of time.

13. A power output apparatus according to claim 12, further comprising:
5 a motor state detector that detects an operating state of the electric motor; and

a state determining unit that determines whether the electric motor can be driven with the driving characteristic that exceeds the rated value, based on the operating state detected by the motor state detector,

10 wherein the drive controller performs control in response to the command from the command generating unit, depending upon a result of determination made by the state determining unit.

14. A power output apparatus according to claim 13, further comprising a result output unit that outputs the result of determination made by the state
15 determining unit.

15. A motor vehicle comprising the power output apparatus according to claim 12.

16. A control method of a power output apparatus operable to generate power from at least an electric motor to a drive shaft, comprising the steps of:

20 selecting one from a plurality of output characteristic patterns in which power is generated to the drive shaft; and

controlling driving of at least the electric motor so that power that is within a range of the selected output characteristic pattern is generated to the drive shaft.

25 17. A control method of a power output apparatus operable to generate power from at least an electric motor to a drive shaft, comprising the steps of:

generating a command to drive the electric motor with a driving characteristic that exceeds a rated value of the driving characteristic of the electric motor;

30 controlling, in response to the command, driving of the electric motor with the driving characteristic that exceeds the rated value for a limited period of time.